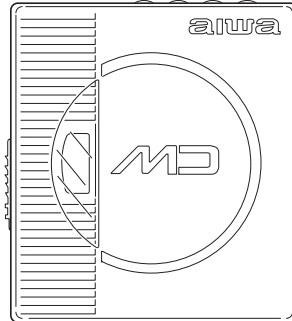




AM-HX50 AHK1(S) AM-HX55 AHK1(L,W)



SERVICE MANUAL

MINIDISC PLAYER

BASIC MD MECHANISM : ZZG-5 A

This Service Manual is the "Revision Publishing" and replaces "Simple Manual"
(S/M Code No.09-999-335-5T2).

aiwa
S/M Code No. 09-999-335-5R2

REVISION
DATA

SPECIFICATIONS

Main unit

Playback system

MiniDisc digital audio system

Laser pickup

Semiconductor laser

Sampling Frequency

44.1 kHz

Number of channels

Stereo: 2 channels
Monaural: 1 channel

D/A converter

1-bit


Frequency response

40 – 20,000 Hz ± 4 dB
20 – 20,000 Hz ± 1 dB (10 k Ω)

Wow and Flutter

Below measurable limit
($\pm 0.001\%$ W.PEAK)

Output

 jack
Maximum output level
8 mW +8 mW (16 ohms)

Power requirements

DC 1.2 V using the supplied Ni-MH
rechargeable battery MHB-901
DC 1.5 V using a LR6 (size AA) dry cell
battery
AC house current using an optional AC
adaptor

Battery life

Using the supplied rechargeable battery
Approx. 19 hours
Using an LR6 (size AA) dry cell battery
Approx. 27 hours
Using the supplied rechargeable battery and
an LR6 (size AA) dry cell battery
Approx. 50 hours

Dimensions

Approx. 71.6 (W) \times 14.2 (H) \times
78.5 (D) mm
(2 $\frac{7}{8}$ \times $\frac{9}{16}$ \times 3 $\frac{1}{8}$ in.)


Weight

Approx. 91 g, 3.2 oz
including the rechargeable
battery

<Battery charger RB-M02 K>

Rated voltage

AC 240 V, 50 Hz

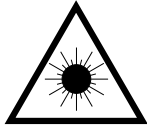
- Design and specifications are subject to change without notice.
- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.
- The word "BBE" and the "BBE symbol" are trademarks of BBE Sound, Inc. Under license from BBE Sound, Inc.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs laser. Therefore, be sure to follow carefully the instructions below when servicing.

WARNING!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION. BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.



- Caution: Invisible laser radiation when open and interlocks defeated avoid exposure to beam.
- Advarsel: Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

VAROITUS!

Laiteen Käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyt-täjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

WARNING!

Om apparaten används på annat sätt än vad som specificeras i denna bruksanvisning, kan användaren utsättas för osynlig laserstråling, som överskrider gränsen för laserklass 1.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

ATTENTION

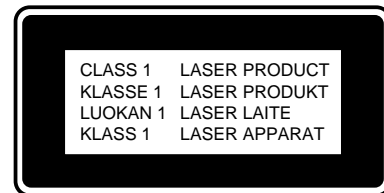
L'utilisation de commandes, réglages ou procédures autres que ceux spécifiés peut entraîner une dangereuse exposition aux radiations.

ADVARSEL!

Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

This Compact Disc player is classified as a CLASS 1 LASER product.

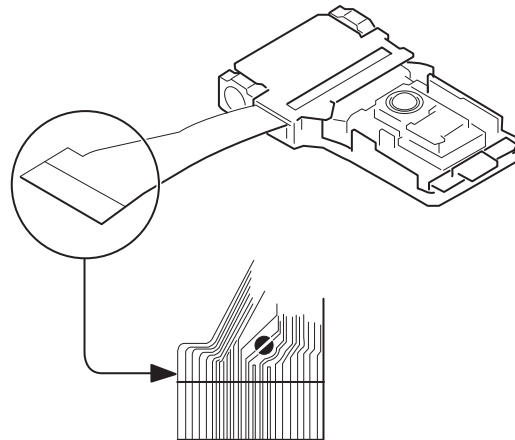
The CLASS 1 LASER PRODUCT label is located on the rear exterior.



Precaution to replace Optical block (KLR2000)

Body or clothes electrostatic potential could ruin laser diode in the optical block. Be sure ground body and workbench, and use care the clothes do not touch the diode.

- 1) After the connection, remove solder shown in the right figure.

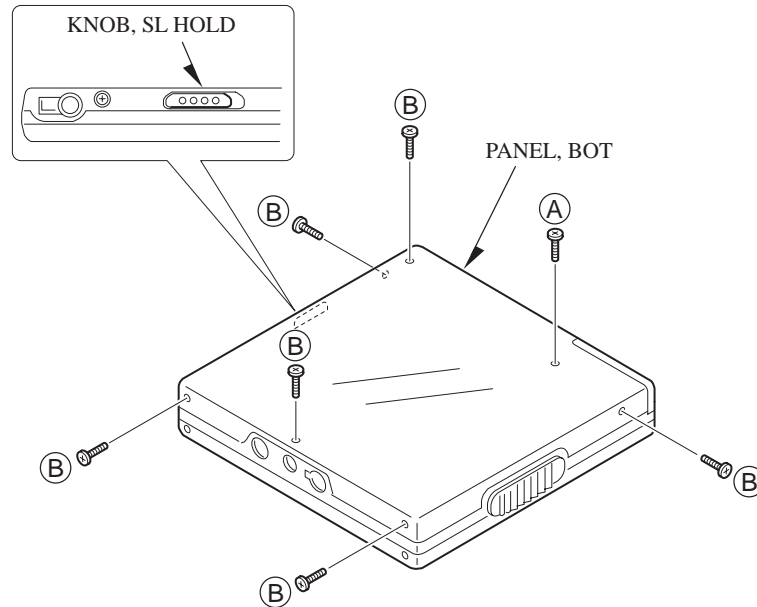


DISASSEMBLY INSTRUCTIONS

1. Removing the PANEL, BOT

Remove the screw (A)×1 and screw (B)×6, and remove the PANEL, BOT in the direction of the arrow.

* When attaching the PANEL, BOT, set the KNOB, SL HOLD.



2. Removing the MAIN C.B

1) Connect the shorting lands of the pickup by a solder bridge.

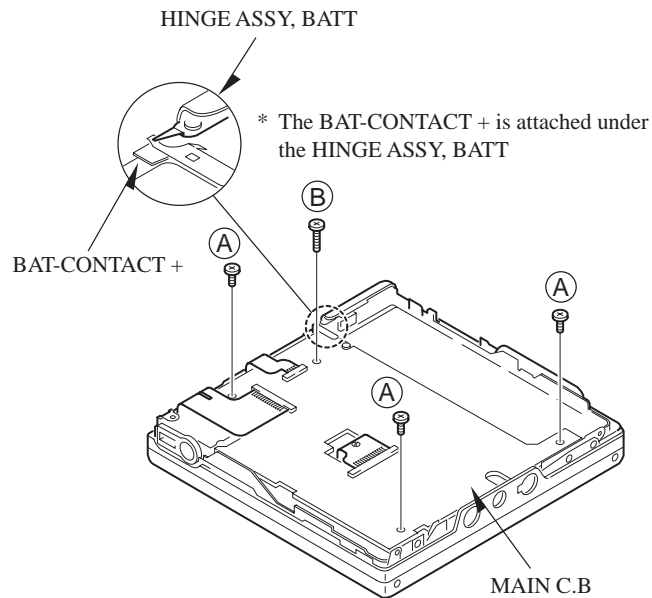
* When the MAIN C.B is attached, remove the solder bridge.

2) Remove the FFC of the CN300, CN700 and CN100.

3) Remove the screw (A)×3 and screw (B)×1.

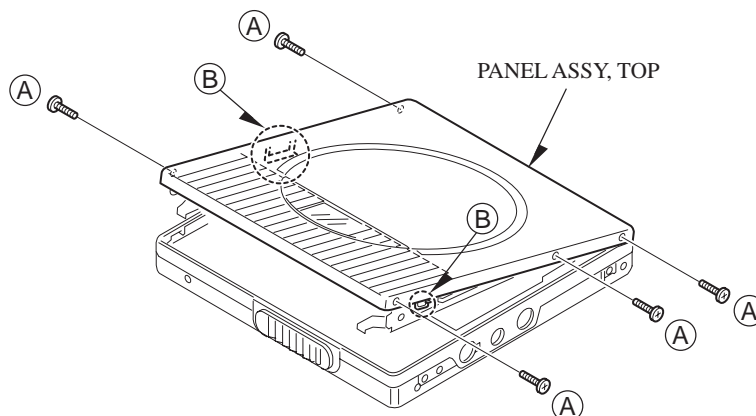
4) Remove the battery lid and remove the MAIN C.B, while being careful of the BAT-CONTACT +.

* When the MAIN C.B is attached, be careful of the BAT-CONTACT +.



3. Removing the PANEL ASSY, TOP

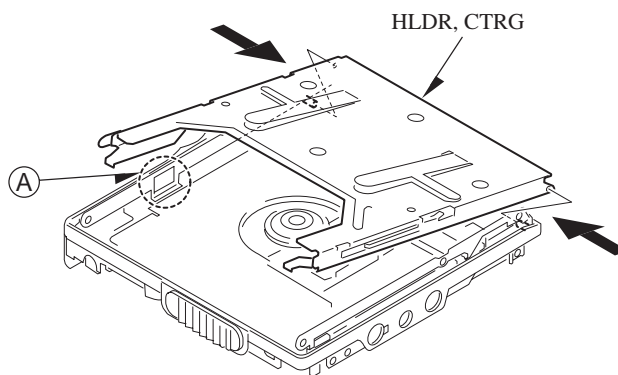
Remove the screw (A)×5 and unlock the claw (B) of the HLDR, CTRG to remove the PANEL ASSY, TOP.



4. Removing the HLDR, CTRG

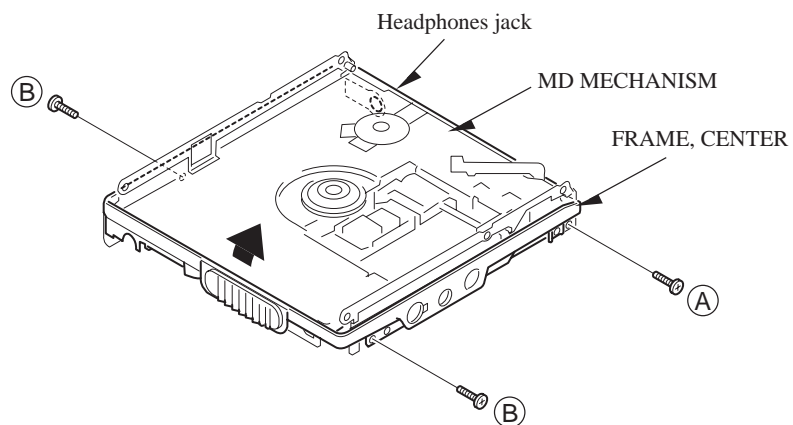
Remove the HLDR, CTRG by bending both sides of the HLDR, CTRG.

* Be careful not to bend portion A.



5. Removing the MECHANISM

- 1) Remove the screw ①×1 and screw ②×2.
- 2) Remove the MECHANISM, while being careful not to catch the Headphones jack in the FRAME, CENTER.
 - * Be careful not bend the screw of the FRAME, CENTER.



ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
IC				C308	87-A10-770-080		C-CAP,V 0.1-10 K B
				C309	87-A10-770-080		C-CAP,V 0.1-10 K B
	87-A21-294-010	C-IC,LA9606		C400	87-A11-049-080		C-CAP,U 1-6.3 K B
	87-A21-295-010	C-IC,LC89641		C401	87-A11-049-080		C-CAP,U 1-6.3 K B
	87-A21-140-010	C-IC,MSM51V17400D		C402	87-A10-556-080		C-CAP,V 2200P-50 K B
	87-017-861-040	IC,TC7W74FU					
	87-A21-328-040	C-IC,RQ5RW19BA-TR		C403	87-A10-556-080		C-CAP,V 2200P-50 K B
				C404	87-A10-556-080		C-CAP,V 2200P-50 K B
	8A-HM3-603-010	C-IC,LC875164A		C405	87-A10-556-080		C-CAP,V 2200P-50 K B
	87-A21-030-040	C-IC,S-93C46AMFN		C406	87-A10-556-080		C-CAP,V 2200P-50 K B
	87-A21-024-010	C-IC,BD6601KV		C407	87-A10-556-080		C-CAP,V 2200P-50 K B
	87-A21-316-080	C-IC,S-8328B24MC					
	87-A20-861-040	C-IC,S-80808ANNP		C408	87-A11-049-080		C-CAP,U 1-6.3 K B
				C409	87-A10-765-080		C-CAP,V 0.033-10 K B
	87-A20-982-040	C-IC,S-80822ANNP		C410	87-A10-765-080		C-CAP,V 0.033-10 K B
	87-A21-341-040	C-IC,TA2131FL		C411	87-A10-770-080		C-CAP,V 0.1-10 K B
				C412	87-A10-770-080		C-CAP,V 0.1-10 K B
TRANSISTOR				C413	87-A10-770-080		C-CAP,V 0.1-10 K B
	87-A30-070-080	C-TR,RN4902		C415	87-A11-046-080		C-CAP,TN 100U-4 M F95 B
	89-115-884-080	CHIP -TRANSISTER 2SA1588Y		C416	87-A11-751-080		C-CAP,TN 22U-4 M P
	87-A30-181-040	C-TR,DTA114TEA		C417	87-A11-807-080		C-CAP,TN 4.7U-6.3 M P
	87-A30-180-040	C-TR,DTC114TEA		C600	87-A11-806-080		C-CAP,TN 47U-6.3 M PSLB
	87-A30-149-080	C-FET,2SJ347					
				C601	87-A10-557-080		C-CAP,V 3300P-25 K B
	87-A30-261-080	C-FET,FDC633N		C602	87-A11-806-080		C-CAP,TN 47U-6.3 M PSLB
	87-A30-262-080	C-FET,FDC634P		C603	87-A10-770-080		C-CAP,V 0.1-10 K B
	89-332-654-080	CHIP TRANSISTOR, 2SC3265Y		C604	87-A10-770-080		C-CAP,V 0.1-10 K B
	87-A30-147-080	C-TR,2SA1832GR		C605	87-A10-554-080		C-CAP,V 1000P-50 K B
				C606	87-A11-807-080		C-CAP,TN 4.7U-6.3 M P
				C607	87-A11-049-080		C-CAP,U 1-6.3 K B
DIODE				C700	87-A11-050-080		C-CAP,TN 47U-4 M F95 A
	87-017-850-080	C-DIODE,DAP222		C701	87-A10-770-080		C-CAP,V 0.1-10 K B
	87-A40-687-080	C-DIODE,M1FH3		C702	87-A10-543-080		C-CAP,V 100P-50 J CH
				C703	87-A10-543-080		C-CAP,V 100P-50 J CH
				C704	87-A10-543-080		C-CAP,V 100P-50 J CH
				C705	87-A10-543-080		C-CAP,V 100P-50 J CH
				C706	87-A11-049-080		C-CAP,U 1-6.3 K B
				C707	87-016-449-080		C-CAP,TN 10-4 F95 P
MAIN C.B							
C101	87-A10-770-080	C-CAP,V 0.1-10 K B		C708	87-016-449-080		C-CAP,TN 10-4 F95 P
C102	87-A10-765-080	C-CAP,V 0.033-10 K B		C709	87-A11-058-080		C-CAP,U 0.22-10 K B
C103	87-A10-766-080	C-CAP,V 0.047-10 K B		C710	87-A11-058-080		C-CAP,U 0.22-10 K B
C104	87-A10-765-080	C-CAP,V 0.033-10 K B		C711	87-A11-049-080		C-CAP,U 1-6.3 K B
C105	87-A10-765-080	C-CAP,V 0.033-10 K B		C712	87-A11-049-080		C-CAP,U 1-6.3 K B
C106	87-A10-765-080	C-CAP,V 0.033-10 K B		C713	87-A11-751-080		C-CAP,TN 22U-4 M P
C107	87-A10-765-080	C-CAP,V 0.033-10 K B		C720	87-A11-058-080		C-CAP,U 0.22-10 K B
C108	87-A10-531-080	C-CAP,V 10P-50 D CH		C721	87-A10-260-080		C-CAP,U 0.1-16 K B
C110	87-A11-969-080	C-CAP,U 0.082-16 K B		CN100	87-A60-955-080		C-CONN,21P H 54550-2117
C111	87-A10-561-080	C-CAP,V 0.01U-16 K B		CN300	87-A61-020-080		C-CONN,4P H 54550-0417
C112	87-A10-561-080	C-CAP,V 0.01U-16 K B		CN700	87-A60-954-080		C-CONN,16P H 54548-1611
C114	87-A10-770-080	C-CAP,V 0.1-10 K B		D300	87-A40-556-080		C-LED,CL-270HR RED
C115	87-A10-556-080	C-CAP,V 2200P-50 K B		AF600	87-A90-745-080		C-FUSE,750MA 13.2V MINISMD C075
C116	87-A11-049-080	C-CAP,U 1-6.3 K B		AF601	87-A90-745-080		C-FUSE,750MA 13.2V MINISMD C075
C117	87-A11-751-080	C-CAP,TN 22U-4 M P		J700	87-A60-682-010		JACK,3.5 ST 7P
C118	87-A11-050-080	C-CAP,TN 47U-4 M F95 A		L100	87-A50-360-080		C-COIL, 47UH K NLF C252018
C119	87-A11-050-080	C-CAP,TN 47U-4 M F95 A		L101	87-003-245-080		C-COIL, 22UH
C120	87-A10-770-080	C-CAP,V 0.1-10 K B		L200	87-003-245-080		C-COIL, 22UH
C121	87-A11-751-080	C-CAP,TN 22U-4 M P		L300	87-003-245-080		C-COIL, 22UH
C122	87-A10-561-080	C-CAP,V 0.01U-16 K B		L400	87-A50-475-080		C-COIL, 10UH K NLF C201614
C200	87-016-449-080	C-CAP,TN 10-4 F95 P		L401	87-A50-475-080		C-COIL, 10UH K NLF C201614
C201	87-A11-050-080	C-CAP,TN 47U-4 M F95 A		L402	87-A50-475-080		C-COIL, 10UH K NLF C201614
C202	87-A10-770-080	C-CAP,V 0.1-10 K B		L403	87-A50-475-080		C-COIL, 10UH K NLF C201614
C203	87-A10-561-080	C-CAP,V 0.01U-16 K B		L405	87-A50-011-080		C-COIL, 47UH LQH3C
C204	87-A10-766-080	C-CAP,V 0.047-10 K B		L406	87-003-245-080		C-COIL, 22UH
C205	87-A10-535-080	C-CAP,V 22P-50 J CH		L600	87-A50-502-080		C-COIL, 82UH C4-K3L
C206	87-A10-535-080	C-CAP,V 22P-50 J CH		L701	87-005-769-080		C-COIL,S 100UH K
C208	87-A10-770-080	C-CAP,V 0.1-10 K B		L702	87-A50-233-080		C-COIL,ACM4532-102-3P
C209	87-A10-770-080	C-CAP,V 0.1-10 K B		R305	87-022-239-080		C-RES U 10K-1/16WF
C212	87-A11-751-080	C-CAP,TN 22U-4 M P		R306	87-022-249-080		C-RES U27K 1/16WF
C300	87-A10-770-080	C-CAP,V 0.1-10 K B		R701	87-A50-208-080		C-COIL,BLM11A601SPT
C301	87-A10-561-080	C-CAP,V 0.01U-16 K B		S300	87-A91-436-080		C-SW,PUSH 2-1-1 SPVE3.8
C302	87-A10-561-080	C-CAP,V 0.01U-16 K B		S301	87-A90-330-080		C-SW,SL 1-1-2 SSSS81
C303	87-A10-561-080	C-CAP,V 0.01U-16 K B		X200	87-A70-207-080		C-VIB,16.9344MHZ SSR-B
C304	87-A10-561-080	C-CAP,V 0.01U-16 K B		X300	87-A70-212-080		C-VIB,3.00MHZ PBRC-B
C305	87-A11-050-080	C-CAP,TN 47U-4 M F95 A					

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
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FLEX JACK C.B

8A-HM3-601-010	PWB,FLEX JACK
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FLEX KEY C.B

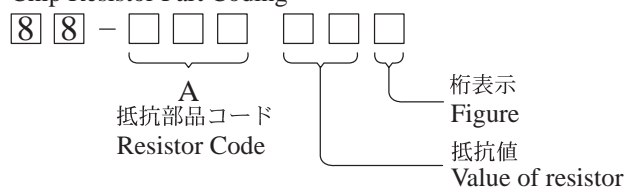
8A-HM3-602-010	PWB,FLEX KEY
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- Regarding connectors, they are not stocked as they are not the initial order items.
The connectors are available after they are supplied from connector manufacturers upon the order is received.


チップ抵抗部品コード／CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち

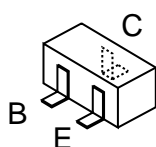
Chip Resistor Part Coding



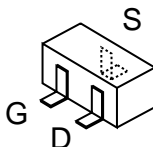
チップ抵抗
Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)				抵抗コード : A Resistor Code : A
				外形／Form	L	W	t	
1/16W	1005	± 5%	CJ		1.0	0.5	0.35	104
1/16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1/10W	2125	± 5%	CJ		2	1.25	0.45	118
1/8W	3216	± 5%	CJ		3.2	1.6	0.55	128

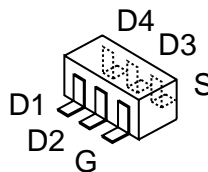
TRANSISTOR ILLUSTRATION



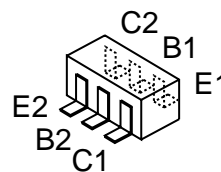
2SA1588 DTA114TEA
2SA1832 DTC114TEA
2SC3265



2SJ347

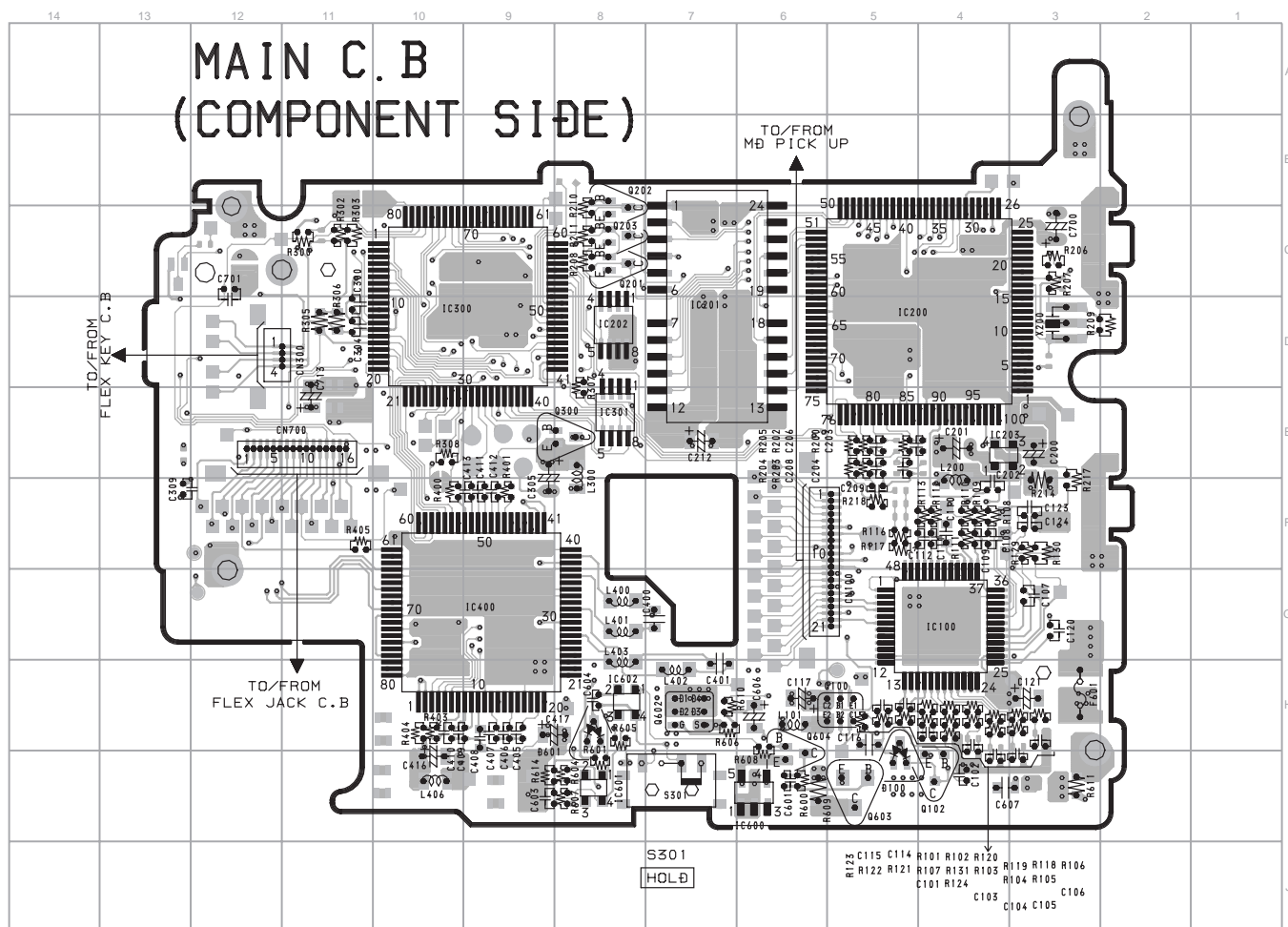


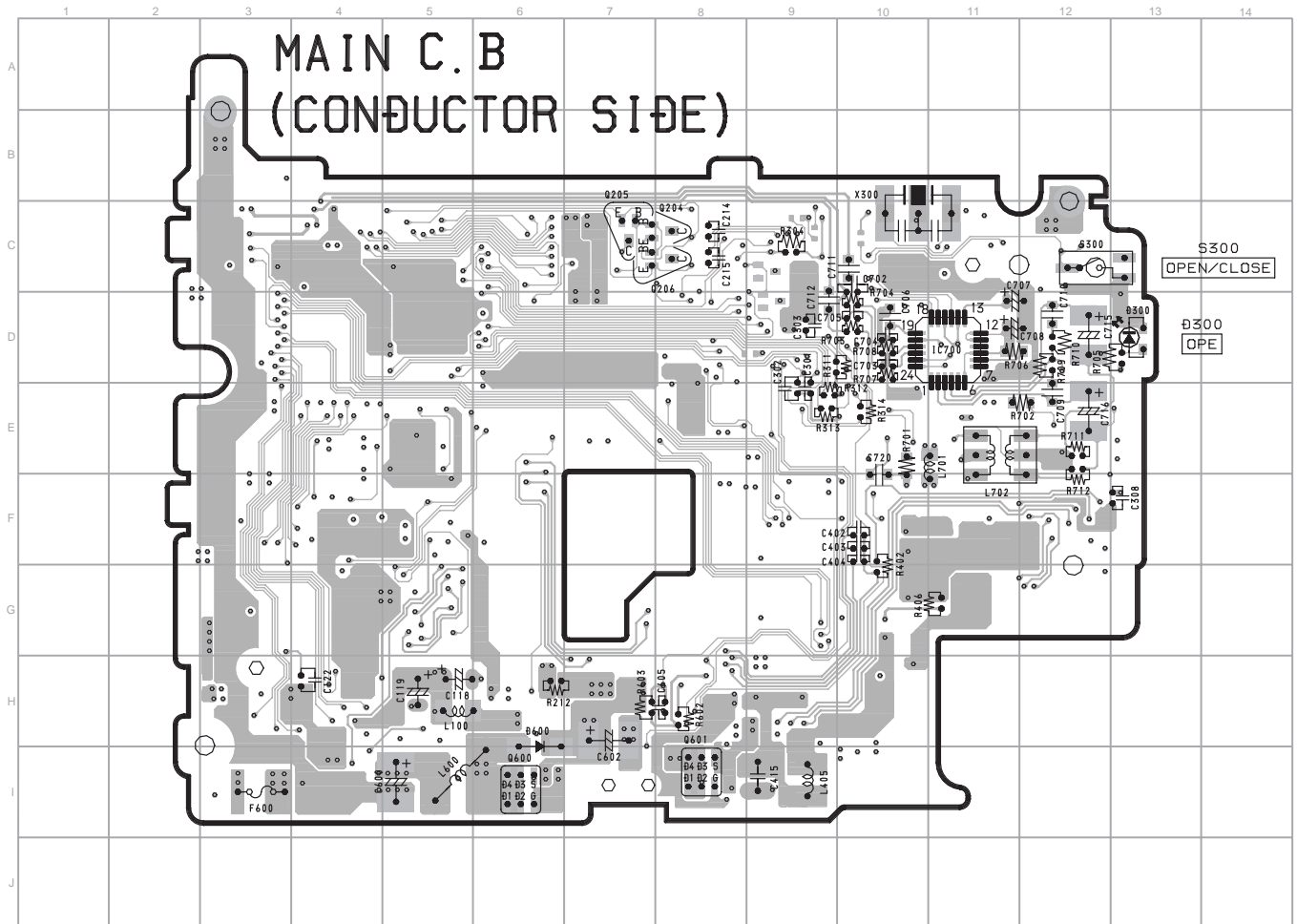
FDC633N
FDC634P



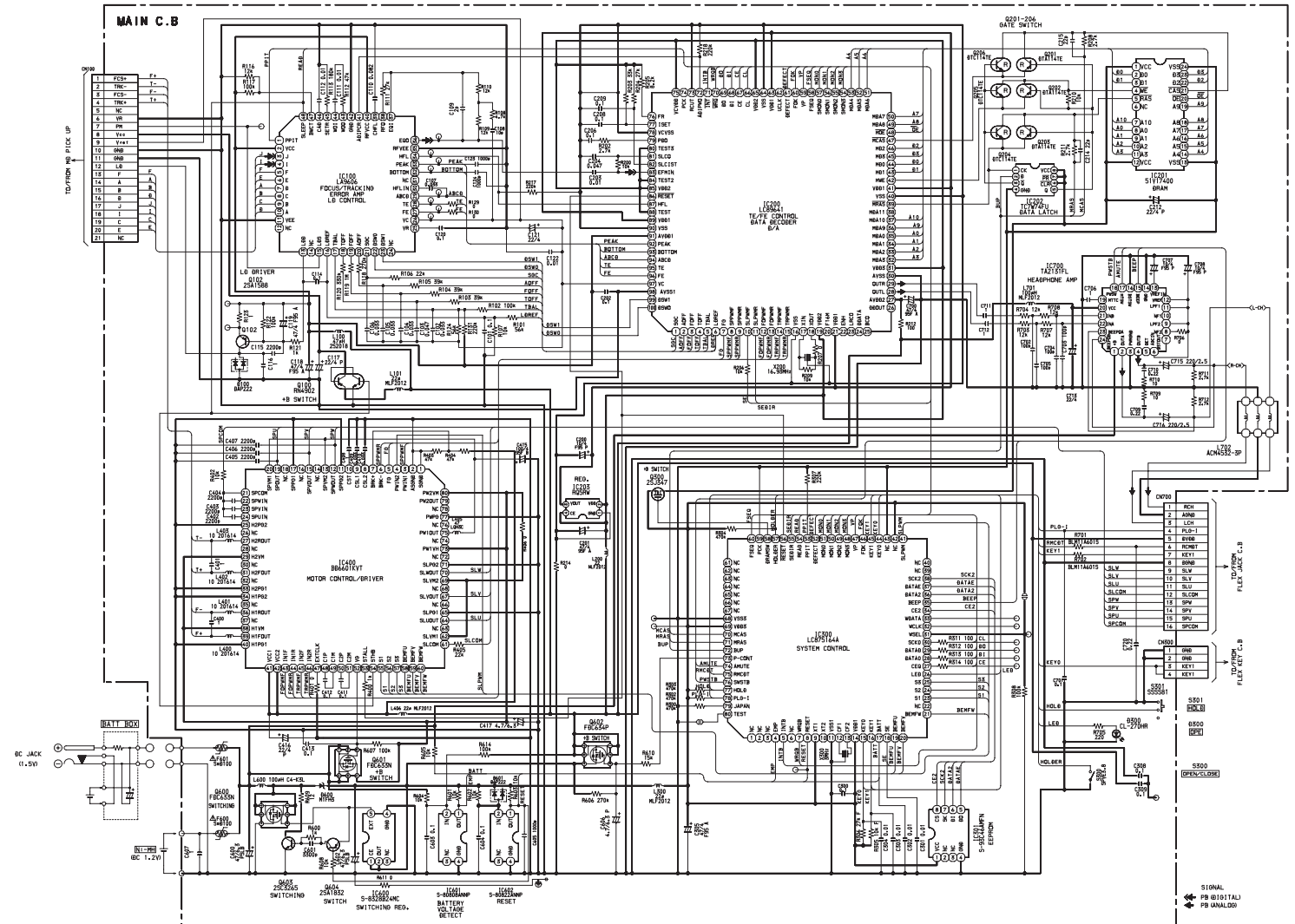
RN4902

WIRING-1 (MAIN)

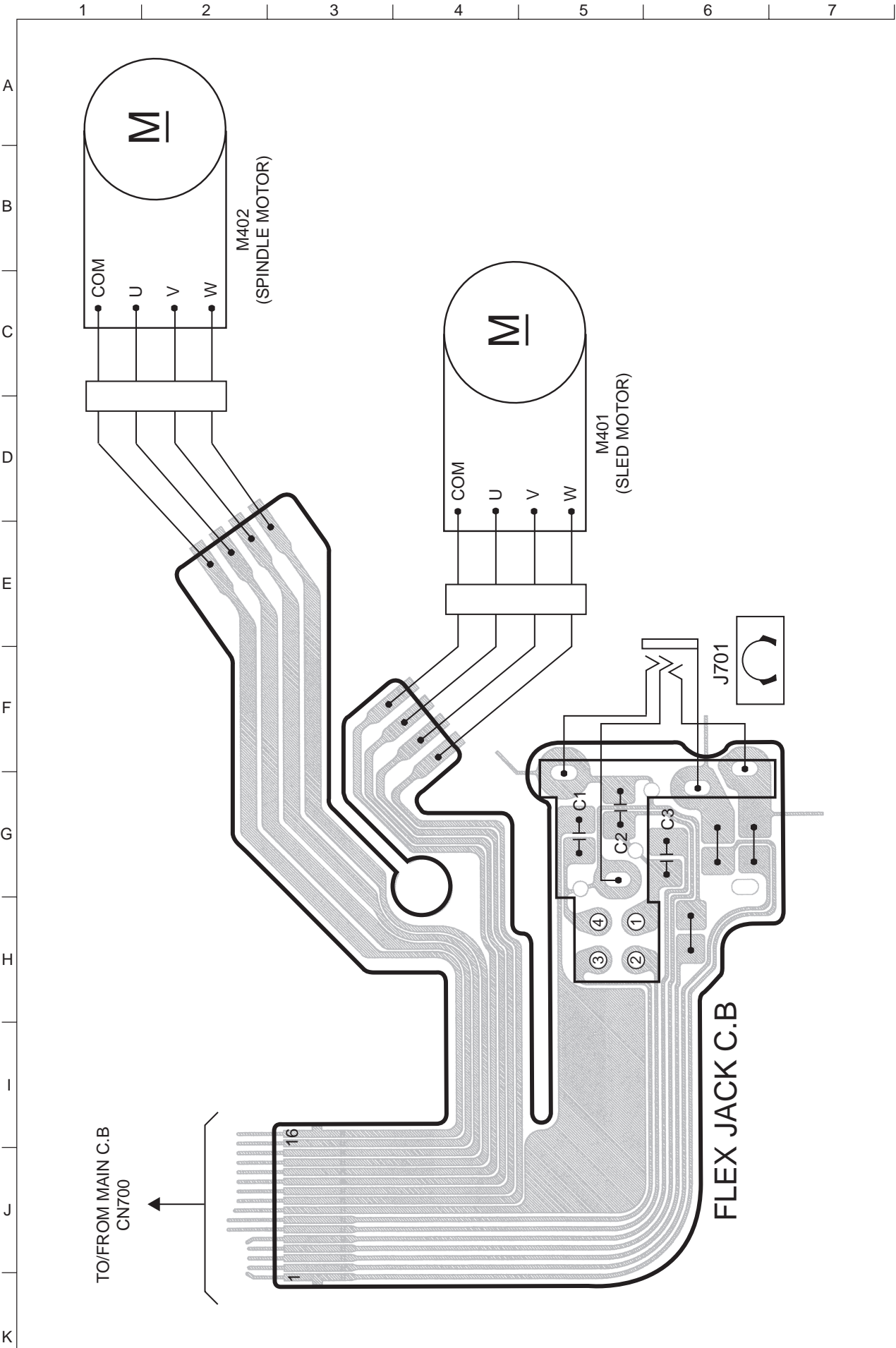




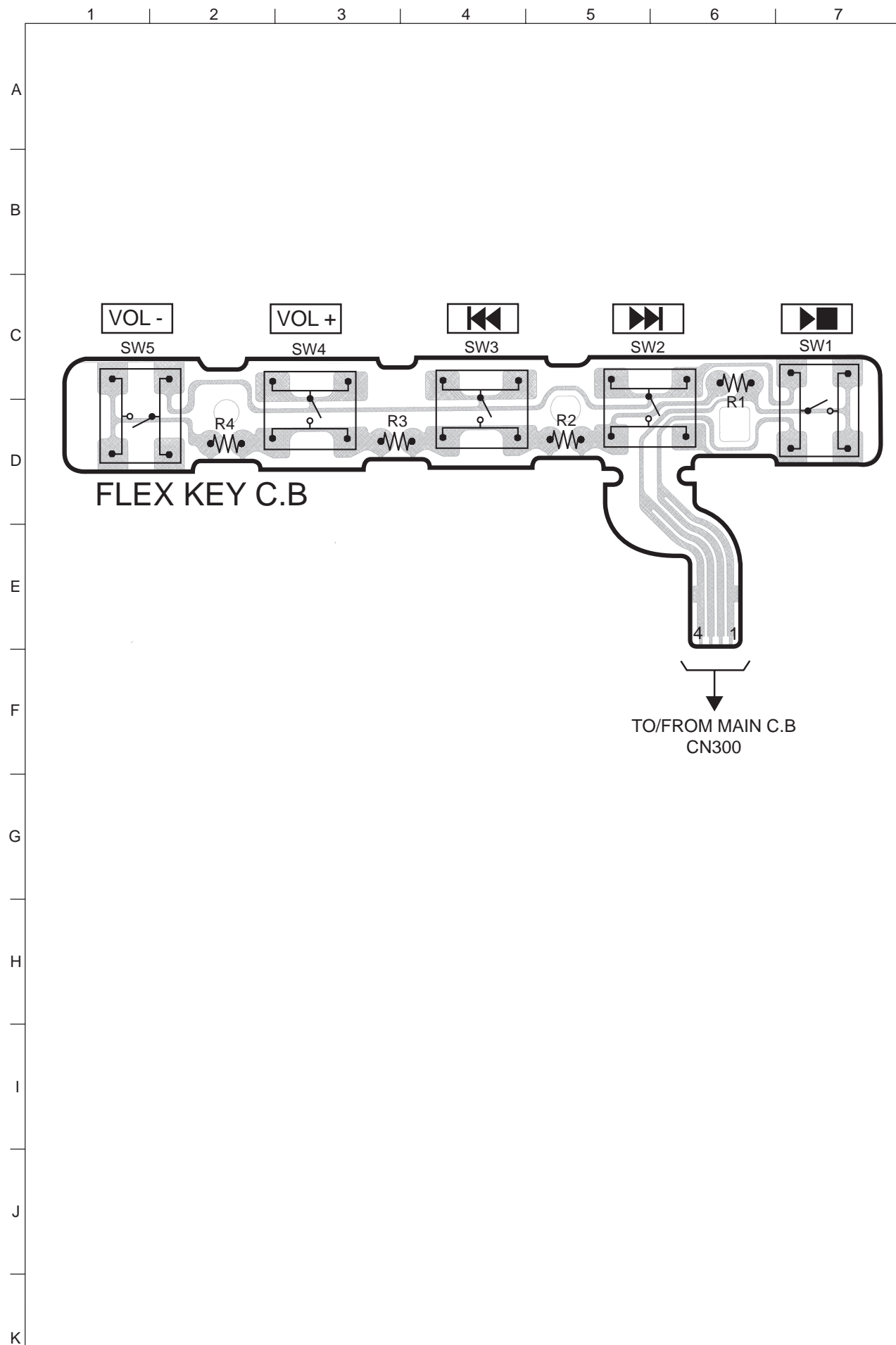
SCHEMATIC DIAGRAM



WIRING-2 (JACK FLEX)



WIRING-3 (KEY FLEX)



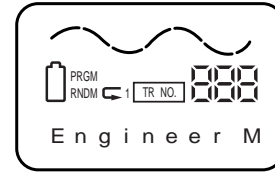
TEST MODE

Each operation is displayed on the LCD of the remote control. Proceed to the next operation using the keys of the main unit and the remote control.

- * The test mode is operated ignoring abnormalities. If an abnormality occurs, disconnect the power plug immediately.
- * The HOLD switch of the remote control functions during the test mode.

1. Starting and stopping the test mode

- (1) Starting
While pressing the “VOL-” key of the main unit and the “VOL-” key of the remote control, turn on the power (by installing the battery).
After the test mode starts, all LCD indicators light and the EL back indicator lights.
Then, “Engineer MODE Ver. *. **” appears.
- (2) Stopping
To stop the test mode, turn off the power.



LCD display during startup of test mode

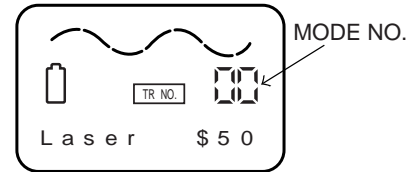
2. Test mode operation

The test mode consists of 14 modes, No. 0 to No. 13 (00 to 0d). The test modes are arranged in order of playback.

Select a mode using the VOL +/- key and execute/stop the mode using the PLAY key. When the mode is executed, the data is displayed in “\$XXXX”.

- * The value of “\$XXXX” is IC internal data and has no meaning. (except for No.13).

If an error occurs during checking, “Failed” is displayed.



Example of mode display

NO.	LCD display		Contents
0	00	Laser \$XX	Laser power adjustment value
1	01	VC \$XXXX	VC offset
2	02	ABCD \$XXXX	ABCD input offset
3	03	FE \$XXXX	Focus error offset
4	04	TE \$XXXX	Tracking error offset
5	05	FOCUS CHK	Focus search (focus servo OFF), spindle rough servo
6	06	FOCUS SRCH FOCUS ON!	Focus search, spindle rough servo During DISC IN, focus servo ON
7	07	Laser \$ XX	Laser power adjustment value
8	08	ABCD G \$XX	ABCD AGC
9	09	EF \$XXXX	Traverse adjustment value
10	0A	FG \$XXXX	Focus gain adjustment value
11	0B	TG \$XXXX	Tracking gain adjustment value
12	0C	FB \$XXXX	Focus bias adjustment value
13	0D	XXXc XXs	ALL SERVO ON, cluster address, sector address display

(1) Laser power check

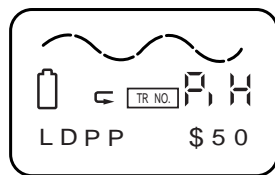
Press the DISP/SEARCH key of the remote control to illuminate the laser.

The operation cycles among OFF → PIT laser power → GRV laser power → OFF repeats each time the key is pressed.

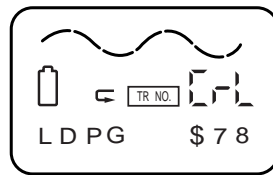
- LCD display

PIT laser power "LDPP \$XX"

GRV laser power "LDPG \$XX"



PIT



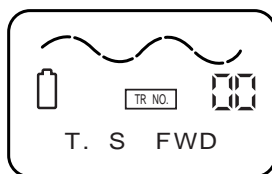
GRV

(2) Sled operation check

To check the sled operation, set the mode to No. 0, or 5 to 12.

Move the pickup to the DISC outer circumference using the F-SKIP key.

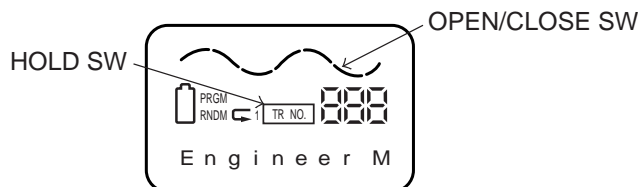
Move the pickup to the DISC inner circumference using the B-SKIP key.



(3) Switch operation check

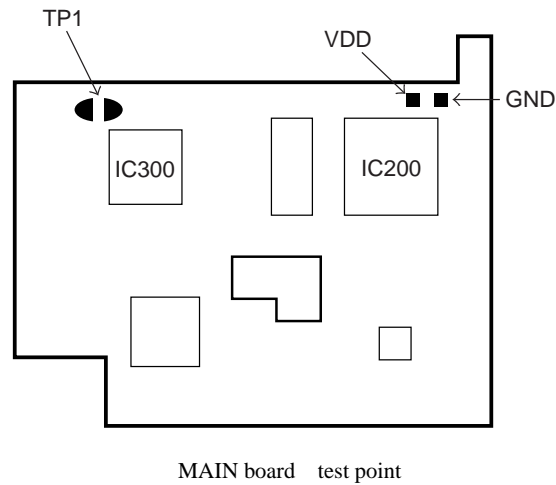
Confirm that the OPEN/CLOSE switch and the HOLD switch of the disc holder can be checked on the LCD of the remote control.

- "~~" is displayed when the disc holder is closed.
- "TR NO." is displayed when the HOLD switch of the main unit is turned on.
The HOLD switch of the remote control is not displayed.



3. Starting and stopping the adjustment mode

Operation of the adjustment mode is checked using the LCD of the remote control.

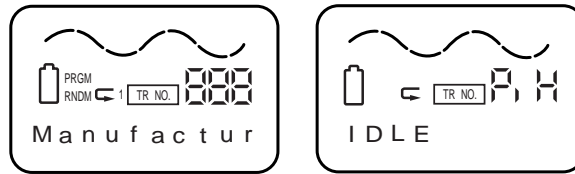


(1) Starting

While shorting TP1 of the main board, turn on the power (by installing the battery).

When the adjustment mode starts, the EL back indicator and all LCD indicators light, then "Manufacture MODE" appears.

After checking the startup, press the STOP key to display "IDLE".



(2) Stopping

To stop the adjustment mode, turn off the power.

(3) Used discs

PIT disc (pre-mastered disc): TEST DISC (TGYS1)

GRV disc (MO disc): SONY MDW-74 (fully pre-recorded disc)

(4) Precautions

- If the disc is dirty or scratched, the adjustment may not be completed.
- Perform the adjustment with the cassette holder of the main unit facing upward.
- Do not adjust manually.
- If "NO ADJ" appears during normal use, it means that the adjustment has not completed.

(5) Prohibited items

Do not press the MODE or DSL/ENTER key of the remote control as this enters the mode for factory use.

When changing the data in this mode, normal operation cannot be performed.

4. Adjustment procedure

(1) PIT disc (TEST DISC: TGYS1)

Insert a disc and press the "PLAY" key. (Be careful of the direction of the unit.)

After "AUTO ADJ H" appears on the LCD of the remote control, "COMPLETE" appears.

(2) GRV disc (SONY MDW-74)

Insert a disc and press the "PLAY" key. (Be careful of the direction of the unit.)

After "AUTO ADJ L" appears on the LCD of the remote control, "COMPLETE" appears.

* If "Failed" appears during adjustment, it means that the adjustment was suspended due to an error.

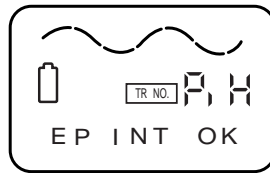
5. Others

(1) Initializing the EEPROM

While "IDLE" is displayed, press the DISP/SEARCH key to initialize the EEPROM.

After initialization, "EP INIT OK" appears on the LCD.

* After initialization, perform the adjustment again, otherwise "NO ADJUST!" will appear during normal use.



(2) Sled operation check

While "IDLE" is displayed, move the pickup to the outer circumference by pressing the F-SKIP, then move the pickup to the inner circumference by pressing the B-SKIP.

IC DESCRIPTION

IC, LC875164A

Pin No.	Pin Name	I/O	Description
1-3	NC	O	Not used (L output).
4	EMP	I	Interrupt input at reduced power supply voltage.
5	INTB	I	Interrupt request input from LC89641.
6	NC	O	Not used (L output).
7	WRQB	I	Interrupt request input from LC89641.
8	RESET	I	Microprocessor reset.
9	XT1	—	Connected to VDD.
10	XT2	—	Not used (L output).
11	VSS1	—	Connected to GND.
12, 13	CF1, CF2	—	3 [MHz] clock.
14	VDD1	—	Connected to VDD.
15	KEY0	I	A/D input of main unit KEY.
16	KEY1	I	A/D input of remote control KEY.
17	BATT	I	A/D input of battery voltage.
18	SE	I	A/D input of drive voltage of sled.
19	BEMFU	I	Comparator output of motor driver.
20	BEMFV	I	
21	BEMFW	I	
22	NC	O	Not used (L output).
23-25	S1-S3	O	Sled control output.
26	LED	O	Operation LED control signal output (LED ON at H).
27	CE0	O	Chip select signal of LC89641.
28	SWDT0	O	Serial data output to LC89641.
29	SRDT0	I	Serial data input from LC89641.
30	SCLK0	O	Serial clock output to LC89641.
31	P13/SO1	O	Select signal output terminal for writing flash memory (normally L output).
32	P14/S11/SB1	O	Clock output terminal for writing flash memory (normally L output).
33	P15/SCK1	O	Data I/O terminal for writing flash memory (normally L output).
34	CE2	O	Chip select signal output to EEPROM.
35	BEEP	O	BEEP signal output.
36	SWDT2	O	Serial data output to EEPROM.
37	SRDT2	I	Serial data input from EEPROM.
38	SCLK2	O	Serial clock output to EEPROM.
39	S12P3/SCK20	O	L output.
40	BWCT	O	PWM output for adjustment of band-pass filter of LA9606.
41	SLPWM	O	PWM output for VM control of motor driver.
42	VDD2	—	Connected to VDD.
43	VSS2	—	Connected to GND.
44	KEY0	I	Standby cancel signal input from main unit KEY.
45	KEY1	I	Standby cancel signal input from remote control KEY.
46	FOK	I	FOK signal input.

Pin No.	Pin Name	I/O	Description
47	VP	I	VP (CLV servo lock judgement) signal input.
48	MON3	I	Monitor 3 signal input from LC89641.
49	MON2	I	Monitor 2 signal input from LC89641.
50	MON1	I	Monitor 1 signal input from LC89641.
51	MON0	I	Monitor 0 signal input from LC89641.
52	DEFECTION	I	DEFECTION signal input.
53	PPIT	I	PPIT signal input.
54	READ	O	Outputs H during data read.
55	SEDIR	I	Direction input of sled movement (inner → outer at H, outer → inner at L).
56	RESET	O	LC89641 reset signal output.
57	HOLDER	I	Holder OPEN (H)/CLOSE (L) signal input and standby cancel.
58	DRAMSW	O	Power supply control output of DRAM. (power of DRAM is turned on at L.)
59	PCK	I	PCK signal input from LC89641.
60	FSEQ	I	FSEQ signal input from LC89641.
61-67	NC	O	Not used (L output).
68	VSS3	—	Connected to GND.
69	VDD3	—	Connected to VDD.
70	MCAS	O	CAS signal output to DRAM.
71	MRAS	O	RAS signal output to DRAM.
72	BUP	O	Control selector signal output (controlled by microprocessor at H) over DRAM microprocessor control/DSP.
73	P-CONT	O	System power supply control (power ON at L).
74	AMUTE	O	Audio mute signal output (mute ON at H).
75	RMCDT	O	Serial data output to LCD remote control.
76	PWSTB	O	Standby signal output of headphones driver (standby at L).
77	HOLD	I	HOLD signal input (HOLD ON at L).
78	PLG-I	I	Headphones jack insertion detection signal input (insert at L).
79	JAPAN	I	Domestic version/foreign version switching input (domestic version at H).
80	TEST	I	Test mode/main mode switching input (test mode at L).

IC, LC89641

Pin No.	Pin Name	I/O	Description
1	SGC	O	AGC control signal output terminal.
2	AOFFSET	O	ABCD offset control signal output terminal.
3	FOFFSET	O	Focus offset control signal output terminal.
4	TOFFSET	O	Tracking offset control signal output terminal.
5	TBAL	O	Tracking balance control signal output terminal.
6	LDREF	O	Laser control signal output terminal.
7	FG	I	Speed pulse input terminal.
8	SPPWMF	O	Spindle PWM output terminal.
9	SPPWMR	O	
10	SLPWMF	O	Sled PWM output terminal.
11	SLPWMR	O	
12	FOPWMF	O	Focus PWM output terminal.
13	FOPWMR	O	
14	TRPWMF	O	Tracking PWM output terminal.
15	TRPWMR	O	
16	VSS	—	Ground terminal.
17	XIN	I	Input terminal for 16.9344 MHz oscillation.
18	XOUT	O	Output terminal for 16.9344 MHz oscillation.
19	VDD2	—	Power terminal.
20	F16M	O	16.9344 MHz output terminal.
21	VDD1	—	Internal power supply terminal.
22	ENH	O	De-emphasis command output terminal.
23	LRCO	O	LR clock output terminal.
24	DDATA	O	Audio extended data output terminal.
25	BCO	O	Bit clock output terminal.
26	DDOUT	O	Digital audio output terminal.
27	AVDD	—	Power supply terminal for 1BIT DAC.
28	OUTL	O	1BIT DAC L-channel output terminal.
29	OUTR	O	1BIT DAC R-channel output terminal.
30	AVSS	—	Ground terminal for 1BIT DAC.
31	VDD3	—	Power supply terminal.
32	MAD3	O	Address output terminal to DRAM.
33	MAD2	O	
34	MAD1	O	
35	MAD0	O	
36	MAD9	O	
37	MAD10	O	
38	MAD11	O	
39	MRASB	O	$\overline{\text{RAS}}$ signal output terminal to DRAM.
40	VSS	—	Ground terminal.
41	VDD1	—	Internal power supply terminal.

Pin No.	Pin Name	I/O	Description
42	MWEB	O	$\overline{\text{WE}}$ signal output terminal to DRAM.
43	MD1	I/O	Data input/output terminal to DRAM.
44	MD0	I/O	
45	MD3	I/O	
46	MD2	I/O	
47	MCASB	O	$\overline{\text{CAS}}$ signal output terminal to DRAM.
48	MOEB	O	$\overline{\text{OE}}$ signal output terminal to DRAM.
49	MAD8	O	Address output terminal to DRAM.
50	MAD7	O	
51	MAD6	O	
52	MAD5	O	
53	MAD4	O	
54	SMON3	O	Monitor signal output terminal.
55	SMON2	O	
56	SMON1	O	
57	SMON0	O	
58	FSEQ	O	Frame sync detection signal output terminal. Low: sync, Hi: sync NG.
59	VP	O	CLV servo lock detection output terminal.
60	FOK	O	Focus OK signal output terminal.
61	DEFECT	I/O	Defect signal input/output terminal.
62	UCLK	O	4.2336 MHz/8.4672 MHz output terminal.
63	VDD1	—	Internal power supply terminal.
64	VSS	—	Ground terminal.
65	VDD2	—	Power supply terminal.
66	CL	I	Data transfer clock input terminal for CPU interface.
67	CE	I	Chip enable signal input terminal for CPU interface.
68	DI	I	Data input terminal for CPU interface.
69	DO	O	Data output terminal for CPU interface.
70	WRQB	O	Interrupt signal output terminal for CPU interface.
71	INTB	O	
72	ADIPWO	I	Wobble signal input terminal.
73	RCUT	I	Test input terminal.
74	PCK	O	VCEC system clock signal output terminal.
75	VCVDD	—	Power supply terminal for VCEC.
76	FR	I	The terminal to which external bias resistor setting oscillation frequency of VCEC is connected.
77	ISSET	I	The terminal to which external bias resistor setting current charge pump of VCEC is connected.
78	VCVSS	—	Ground terminal for VCEC.
79	PDO	O	Current charge pump output terminal of VCEC.
80	TEST3	I	Input terminal for test.

Pin No.	Pin Name	I/O	Description
81	SLCO	O	HF signal slice level output terminal.
82	SLCIST	I	The terminal to which external bias resistor setting of the slice level adjustment amplifier is connected.
83	EFMIN	I	HF signal input terminal.
84	TEST2	I	Test input terminal.
85	VDD2	—	Power supply terminal.
86	RESETB	I	System reset.
87	HFL	I	Track detection signal input terminal.
88	TEST1	I	Input terminal for test.
89	VDD1	—	Internal power supply terminal.
90	VSS	—	Ground terminal.
91	AVDD1	—	Power supply terminal for digital servo.
92	PEAK	I	PEAK signal input terminal.
93	BOTTOM	I	BOTTOM signal input terminal.
94	ABCD	I	The signal representing the amount of main beam, is input to this terminal.
95	TE	I	Tracking error signal input terminal.
96	FE	I	Focus error signal input terminal.
97	VC	I	Center voltage input terminal.
98	AVSS1	—	Ground terminal for digital servo.
99	DSW1	O	Disc mode switching output.
100	DSW0	O	

IC, BD6601KVT

Pin No.	Pin Name	I/O	Description
1	SGND	—	GND for small signal circuit (MOS).
2	ASGND	—	GND for small signal circuit (Bipolar).
3	PWIN1	I	Half bridge 1 input.
4	PWIN2	I	Half bridge 2 input.
5	FG	O	FG output.
6	BRK—	I	Brake comparator input (-).
7	BRK+	I	Brake comparator input (+).
8	CSL2	—	The terminal 2 to which slope capacitor is connected.
9	CSL1	—	The terminal 1 to which slope capacitor is connected.
10	CST	—	The terminal to which startup oscillator capacitor is connected.
11	SPPG2	—	Spindle power block GND2.
12	SPWOUT	O	Spindle motor output. (W-phase)
13	SPVM2	—	Spindle power block power supply 1.
14	NC	—	Not used.
15	SPVOUT	O	Spindle motor output (V-phase).
16	NC	—	Not used.
17	SPPG1	—	Spindle power block GND1.
18	NC	—	Not used.
19	SPUOUT	O	Spindle motor output (U-phase).
20	SPVM1	—	Spindle power block power supply 1.
21	SPCOM	I	SP IN motor coil intermediate point input terminal.
22	SPWIN	I	SP IN detection comparator input (W-phase).
23	SPVIN	I	SP IN detection comparator input (V-phase).
24	SPUIN	I	SP IN detection comparator input (U-phase).
25	H2PG2	—	H bridge 2 power block GND2.
26	NC	—	Not used.
27	H2ROUT	O	H bridge 2 reverse polarity output.
28	NC	—	Not used.
29	H2VM	—	H bridge 2 power block power supply.
30	NC	—	Not used.
31	H2FOUT	O	H bridge 2 power forward polarity output.
32	NC	—	Not used.
33	H2PG1	—	H bridge 2 power block GND1.
34	H1PG2	—	H bridge 1 power block GND2.
35	NC	—	Not used.
36	H1ROUT	O	H bridge 1 reverse polarity output.
37	NC	—	Not used.
38	H1VM	—	H bridge 1 power block power supply.
39	H1FOUT	O	H bridge 1 forward polarity output.
40	H1PG1	—	H bridge 1 power block GND1.
41	VCC1	—	The power supply terminal 1 for small signal circuit. (MOS).

Pin No.	Pin Name	I/O	Description
42	VCC2	—	The power supply terminal 2 for small signal circuit (Bipolar).
43	IN1F	I	H bridge 1 forward input.
44	IN1R	I	H bridge 1 reverse input.
45	IN2F	I	H bridge 2 forward input.
46	IN2R	I	H bridge 2 reverse input.
47	EXTCLK	I	Sync clock input terminal.
48	C1P	—	CHARGE PUMP capacitor 1 connection terminal +.
49	C1M	—	CHARGE PUMP capacitor 1 connection terminal -.
50	C2P	—	CHARGE PUMP capacitor 2 connection terminal +.
51	C2M	—	CHARGE PUMP capacitor 2 connection terminal -.
52	VG	O	CHARGE PUMP output.
53	STALL	I	Standby terminal.
54	STHB	O	H1 and H2 bridge mute terminal.
55-57	S1-S3	I	Stepping decoder input (1 to 3).
58	BEMFU	O	STEP detection comparator output (U-phase).
59	BEMFV	O	STEP detection comparator output (V-phase).
60	BEMFW	O	STEP detection comparator output (W-phase).
61	SLCOM	I	STEP motor coil center point input terminal.
62	SLVM1	—	Stepping power block power supply 1.
63	NC	—	Not used.
64	SLUOUT	O	Stepping motor output (U-phase).
65	SLPG1	—	Stepping power block GND1.
66	NC	—	Not used.
67	SLVOUT	O	Stepping motor output (V-phase).
68	NC	—	Not used.
69	SLVM2	—	Stepping power block power supply 2.
70	SLWOUT	O	Stepping motor output (W-phase).
71	SLPG2	—	Stepping power block GND2.
72	NC	—	Not used.
73	PW1VM	—	Half bridge 1 power block power supply.
74	NC	—	Not used.
75	PW1OUT	O	Half bridge 1 output.
76	NC	—	Not used.
77	PWPG	—	Half bridge power block GND.
78	NC	—	Not used.
79	PW2OUT	O	Half bridge 2 GND.
80	PW2VM	—	Half bridge 2 power block power supply.

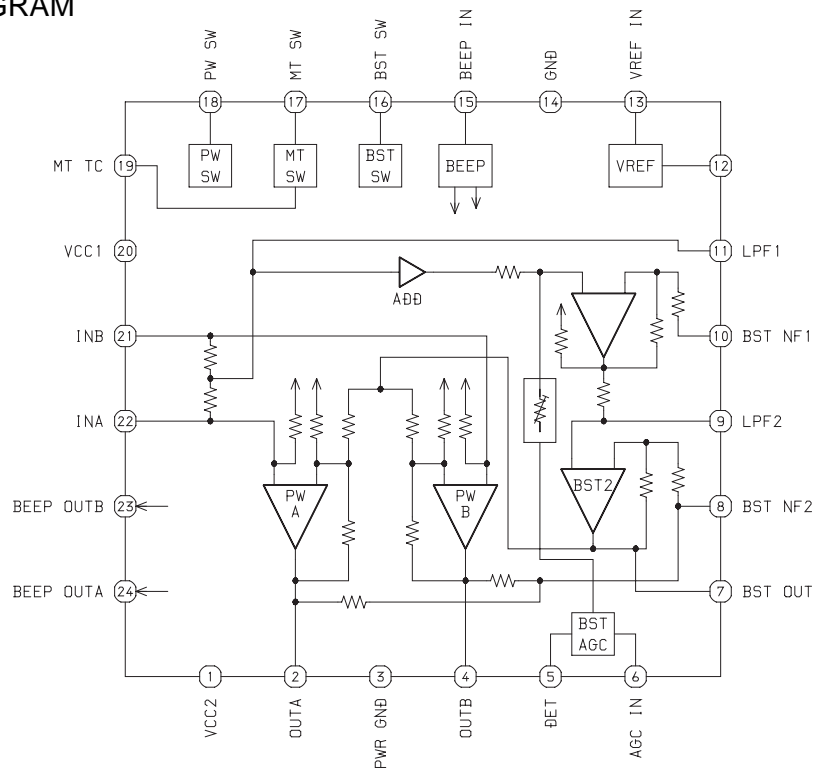
IC, LA9606

Pin No.	Pin Name	I/O	Description
1	PPIT	O	Pit/groove judgement signal output. High = pit, Low = groove.
2	VCC	—	Matrix system power supply pin.
3	J	I	Pin for pickup photo diode connection. Generates the RF single by I pin.
4	I	I	Pin for pickup photo diode connection. Generates the RF single by J pin.
5	P	I	Pin for pickup photo diode connection. Generates the TE signal by E pin.
6	E	I	Pin for pickup photo diode connection. Generates the TE signal by F pin.
7	D	I	Pin for pickup photo diode connection. Generates the FE signal, ABCD signal and WOO signal.
8	C	I	
9	B	I	
10	A	I	
11	VEE	—	Matrix system ground pin.
12	NC	—	Not used.
13	LDD	O	APC circuit output pin.
14	NC	—	Not used.
15	LDS	I	APC circuit input pin.
16	LDREF	I	Input pin for laser power setting.
17	TBAL	I	EF balance adjustment pin.
18	TOFF	I	Offset adjustment pin of TE signal.
19	FOFF	I	Offset adjustment pin of FE signal.
20	AOFF	I	Offset adjustment pin of ABCD signal.
21	SGC	I	VCA gain control pin.
22	DSW0	I	Disc mode setting pin. High = low reflective ratio disc, Low = high reflective ratio disc. Laser off when DSW0 and DSW1 are Low.
23	DSW1	I	Disc mode setting pin. High = Track is chain of pits, Low = Track is groove. Laser off when DSW0 and DSW1 are Low.
24	NC	—	Not used.
25	VR	—	The terminal to which pass-through capacitor for 1/2 VCC is connected.
26	VC	O	1/2 VCC output pin.
27	FE	O	Focus error signal output pin.
28	TE	O	Tracking error signal output pin.
29	ABCD	O	The signal representing the amount of main beam, is output from this terminal.
30	HFLIN	I	Pin for generating HFL signal during groove mode.
31	NC	—	Not used.
32	BOTTOM	O	Bottom signal output pin of RF signal.
33	PEAK	O	Peak signal output pin of RF signal.
34	HFL	O	HFL signal (track ON/OFF) output pin.
35	RFVEE	—	RF system ground pin.
36	EQO	O	RF equalizer output pin.
37	EQI	I	RF equalizer input pin.
38	RFO	O	RF signal output pin.
39	CHFL	—	The terminal to which the button-hold capacitor is connected.

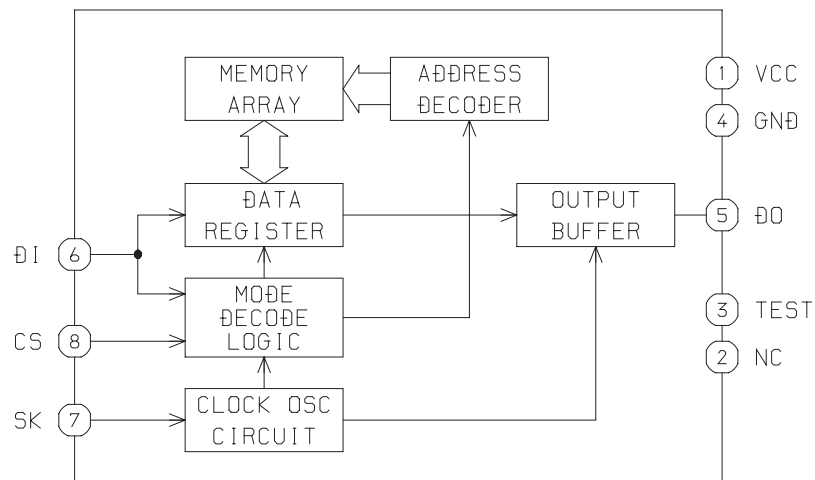
Pin No.	Pin Name	I/O	Description
40	RFVCC	—	RF system power supply pin.
41	ADIPCR	O	ADIP carrier signal output pin.
42	NC	—	Not used.
43	WOO	O	Wobble signal output pin.
44	WOI	I	Wobble signal input pin.
45	SETR	I	Setting pin for band-pass filter.
46	CAD	—	The terminal to which external capacitor of DC-cut of the wobble signal is connected.
47	BWCT	I	Band-pass filter switching pin of wobble signal.
48	SLEEP	I	Sleep mode pin. Power ON at SLEEP = High. Power OFF at SLEEP = Low.

IC BLOCK DIAGRAM

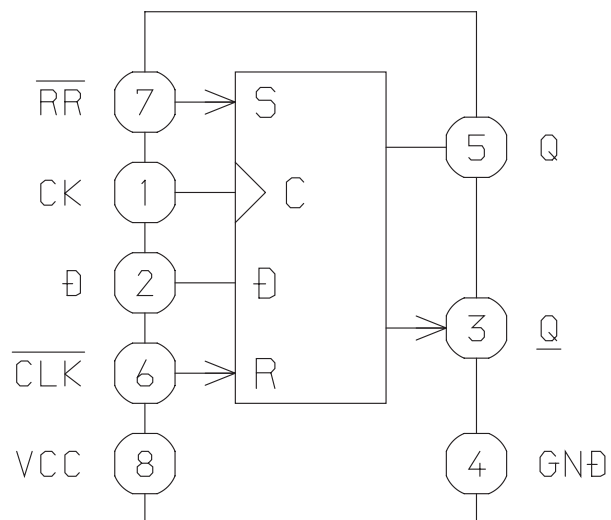
IC, TA2131FL



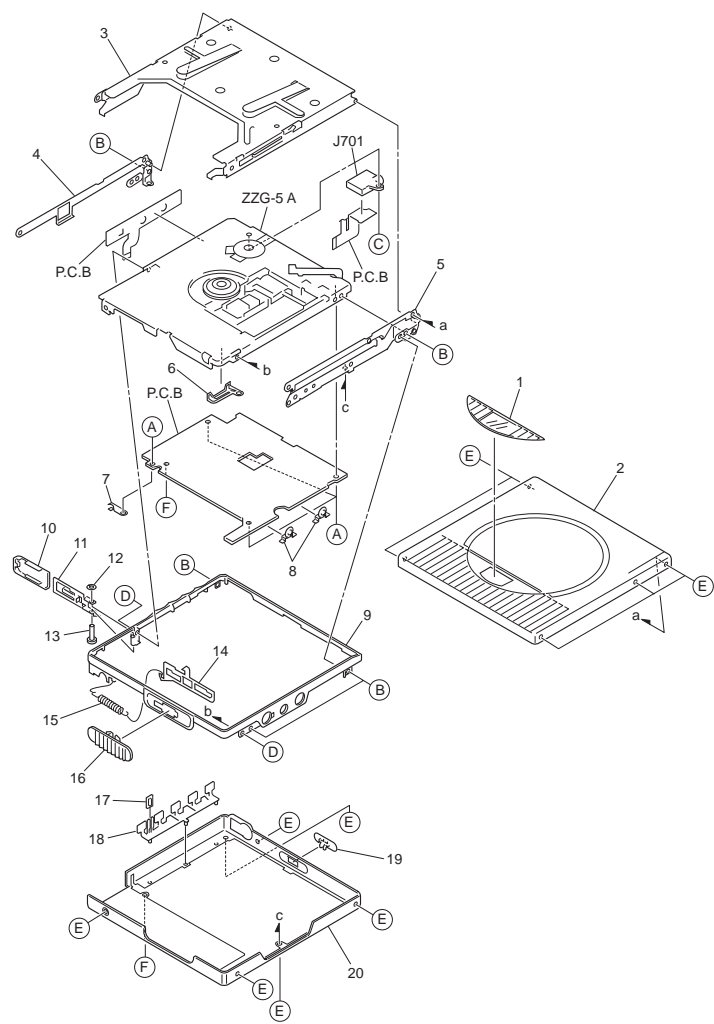
IC, S-93C46AMFN



IC, TC7W74FU



MECHANICAL EXPLODED VIEW 1/1



MECHANICAL PARTS LIST 1/1

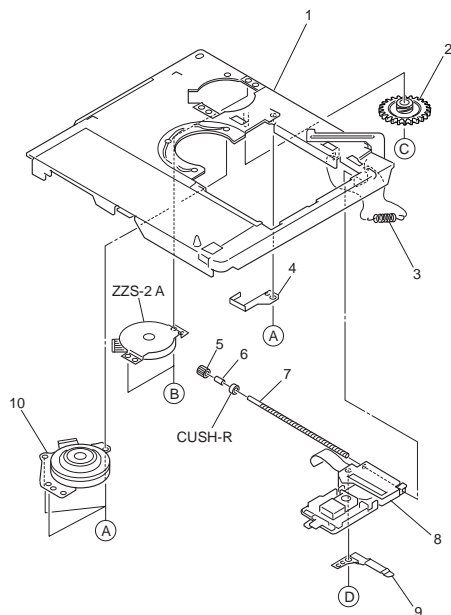
DESCRIPTIONで判断できない物は"REFERENCE NAME LIST"を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	8A-HM3-010-010		WINDOW, DISP<A&H1<S>>	16	8A-HM3-008-110		KNOB, SL EJECT<EXCEPT A&H1<L>>
1	8A-HM4-004-010		WINDOW, DISP<A&H1<H>>	16	8A-HM4-011-110		KNOB, SL EJECT S<A&H1<L>>
1	8A-HM4-013-010		WINDOW, DISP S<A&H1<L>>	17	8A-HM3-006-010		LENS, OPE
2	8A-HM4-001-010		PANEL ASSY, TOP<EXCEPT A&H1<L>>	18	8A-HM3-007-010		KEY, CONT MAIN<EXCEPT A&H1<L>>
2	8A-HM4-005-010		PANEL ASSY, TOP L<A&H1<L>>	18	8A-HM4-010-010		KEY, CONT MAIN S<A&H1<L>>
3	8Z-ZG5-213-110		HLDR, CTRG	19	8A-HM3-009-110		KNOB, SL HOLD<EXCEPT A&H1<L>>
4	8A-HM3-205-010		FRAME ASSY, L	19	8A-HM4-012-110		KNOB, SL HOLD H(D)<A&H1<L>>
5	8A-HM3-201-110		FRAME ASSY, R	20	8A-HM4-015-010		PANEL, BOT HK W<A&H1<H>>
6	8A-HM3-215-110		BAT-CONTACT, -	20	8A-HM4-014-010		PANEL, BOT HR L<A&H1<L>>
7	8A-HM3-214-010		BAT-CONTACT, +	20	8A-HM3-017-010		PANEL, BOT HR S<A&H1<S>>
8	8A-HM3-216-010		BAT-CONTACT, EX	A	8Z-HM1-236-010		S-SCREW, 1.4-1.2 SWCH CR
9	8A-HM3-004-010		FRAME, CENTER<EXCEPT A&H1<L>>	B	8Z-HM1-254-010		S-SCREW, 1.4-1.4CR
9	8A-HM4-008-010		FRAME, CENTER H(D)<A&H1<L>>	C	8Z-ZG2-256-010		S-SCREW, 1.4-3.5
10	8A-HM3-005-010		LID, BATT<EXCEPT A&H1<L>>	D	8Z-HM1-242-010		S-SCREW, 1.4-2.0CR
10	8A-HM4-009-010		LID, BATT L<A&H1<L>>	E	8Z-HM1-243-010		S-SCREW, 1.4-1.4CRNL<EXCEPT A&H1<L>>
11	8A-HM3-210-010		HINGE ASSY, BATT	E	8Z-HM1-244-010		S-SCREW, 1.4-1.4 BLK<A&H1<L>>
12	87-078-053-010		PW 2.5-0.7-0.25 SLT	F	8A-HM3-222-010		S-SCREW, 1.4-3.0 CR
13	8A-HM3-213-010		SHAFT, HINGE BATT	F	8A-HM4-202-010		S-SCREW, 1.4-3.0 BLK<A&H1<L>>
14	8A-HM3-209-010		PLATE, EJECT				
15	8A-HM3-217-010		SPR-E, EJECT				

COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange		

MD MECHANISM EXPLODED VIEW 1/2

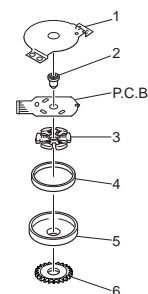


MD MECHANISM PARTS LIST 1/2

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If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	82-Z05-201-010		CHAS ASSY,MECHA	A	88-Z06-224-010		S-SCREW,VBT*1.4-3
2	82-Z05-208-010		GEAR,A	B	87-067-393-010		SCREW *1.4-1.4
3	82-Z05-207-010		SPR-E,EJECT	C	87-067-569-010		POLY WASHER 0.83-2.5-0.25
4	82-Z05-212-010		SPR-E,LEAD	D	87-067-511-010		SCREW,V*1.2 BK
5	82-Z05-209-010		GEAR,B				
6	82-Z05-217-010		BRG, 1.1-2-2				
7	82-Z05-210-010		SHAFT,LEAD				
8	87-A91-414-010		PICKUP,KLR2000				
9	82-Z05-211-010		SPR-P,PACK				
10	87-A91-488-010		MOT, MX-2263				

MD MECHANISM EXPLODED VIEW 2/2



MD MECHANISM PARTS LIST 2/2

DESCRIPTIONで判断できない物は"REFERENCE NAME LIST"を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	8Z-ZS2-214-010		PLATE, BASE Z2S2
2	8Z-ZS2-204-010		BRG ASSY, Z2S2
3	8Z-ZS2-201-010		COIL ASSY, Z2S2
4	8Z-ZS2-213-010		MAGNET, Z2S2
5	8Z-ZS2-208-010		ROTOR ASSY, Z2S2
6	8Z-ZS2-212-010		GEAR, Z2S2

ACCESSORIES/PACKAGE LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
△	1	87-B30-244-010	CHARGER, RB-M02K
	2	87-B30-201-010	BAT, MHB-901
	3	87-B30-297-010	HEADPHONE, HP-M031 H<EXCEPT AHK1<L>>
	3	87-B30-296-010	HEADPHONE, HP-M031 L<AHK1<L>>
	4	87-B30-221-010	CASE, BATTERY
	5	8Z-HM4-605-010	RC UNIT, RC-HX30<EXCEPT AHK1<L>>
	5	8A-HM3-604-010	RC UNIT, RC-HX30 L(I)<AHK1<L>>
	6	8A-HM3-952-010	BAG, CARRING
	7	8A-HM3-951-010	BOX, BAT ASSY AHM-3<EXCEPT AHK1<L>>
	7	8A-HM4-951-010	BOX, BAT ASSY AHM-4 L<AHK1<L>>
	8	8A-HM4-904-010	IB, HR(ECA)

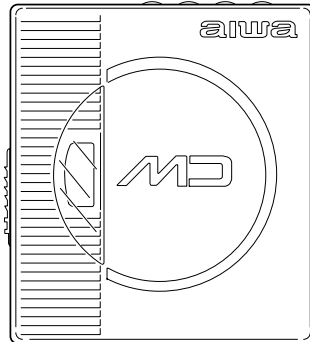


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AM-HX50 AHK1(S) AM-HX55 AHK1(L,W)



SERVICE MANUAL

MINIDISC PLAYER

BASIC MD MECHANISM : ZZG-5 A

This Service manual contains information about correction on Service manual of
AM-HX50<AHK1(S)>/HX55<AHK1(L,W)>(S/M Code No. 09-999-335-5R2).

MECHANICAL PARTS LIST 1/1

TRUE

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
2	8A-HM3-001-010	PANEL	ASSY, TOP<50AHK1<S>>
2	8A-HM4-001-010	PANEL	ASSY, TOP<55AHK1<W>>
2	8A-HM4-005-010	PANEL	ASSY, TOP L<55AHK1<L>>

FALSE

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
2	8A-HM4-001-010	PANEL	ASSY, TOP<EXCEPT AHK1<L>>
2	8A-HM4-005-010	PANEL	ASSY, TOP L<AHK1<L>>

